

WO 2004/059363

PCT/DE2003/004141

- 6 -

PATENT CLAIMS

1. An optical element to be mounted on a shaft, in particular a spindle shaft, for the purpose of
5 deflecting a laser beam, the laser beam being deflected via a first mirror face and a second mirror face, characterized in that at least one further surface (6, 7) is provided for the purpose of compensating for the centrifugal forces and gyroscopic moments of the
10 optical element (1).

2. The optical element as claimed in claim 1, characterized in that the further surface (6) is mounted at an angle (15) of 25° to 65° with respect to
15 the perpendicular (17) of the axis of rotation (8) of the shaft (2).

3. The optical element as claimed in one of the preceding claims,
20 characterized in that the further surface (7) is mounted at an angle (16) of 37.5° to 80° with respect to the perpendicular (18) of the axis of rotation (8) of the shaft (2).

25 4. The optical element as claimed in one of the preceding claims, characterized in that the first mirror face (4) has edges (10) and (11), whose distance from the axis of rotation (8) of the shaft (2) is between 15% and 35% of
30 the outer diameter (14) of the optical element (1).

5. The optical element as claimed in one of the preceding claims, characterized in that the second mirror face (5) has
35 edges (12) and (13), the edge (13) being arranged at a distance of 45% to 110% of the diameter of the laser beam (3) from the axis of the rotation (8) of the shaft (2).

BEST AVAILABLE COPY

WO 2004/059363

PCT/DE2003/004141

- 7 -

6. The optical element as claimed in one of the preceding claims,
characterized in that the optical element (1) is fixed
5 to the shaft (2) via an S-shaped joint.

7. The optical element as claimed in one of the preceding claims,
characterized in that at least two further surfaces
10 (19, 20) and/or (21, 22) are provided for the purpose of compensating for the centrifugal forces and gyroscopic moments of the optical element (1).

8. The optical element as claimed in claim 7,
15 characterized in that the further surfaces (19, 20) and/or (21, 22) are arranged at angles (23 or 24) of 60° to 120° with respect to one another.

BEST AVAILABLE COPY